THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BERNARD LE MOUEL, FRANCOIS-XAVIER OLLIVIER, and JEAN-LUC PAMART

Appeal No. 1997-1982
Application No. 08/483,886

ON BRIEF

Before THOMAS, FLEMING, and GROSS, Administrative Patent Judges.
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 2, and 4 through 7, which are all of the claims pending in this application.

Appellants' invention relates to a device for optimizing signal transmission performance in a system for transmitting digital data on an optical link. The device controls a

relative phase between two propagation modes according to a bit error rate evaluated before error correction decoding.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A signal transmission performance optimization device in a system for transmitting digital data, especially on an optical link, wherein an optical carrier propagates according to two propagation modes, comprising:

a send end unit,

a receive end unit,

an error correcting decoder localized in said receive end unit, and cooperating with an error correcting coder localized in said send end unit,

means for evaluating a bit error rate at said receive end unit before error correcting decoding; and

control means for controlling a relative phase between two propagation modes transmitted via said optical link for at least one of said send end unit and said receive end unit according to an evaluated bit error rate and according to an error correcting code employed in said error correcting coder, wherein said relative phase between said two propagation modes is continuously optimized to prevent the bit error rate at an output of said error correcting decoder from exceeding a maximum bit error rate specified for said system.

The prior art reference of record relied upon by the examiner in rejecting the appealed claims is:[1]

[1] We note that the examiner lists LaRosa, U.S. Patent No. 5,323,421, Harmon, U.S. Patent No. 4,328,581, and Fukasawa, European Patent Application

Heichler 4,932,029 Jun. 05, 1990

Claims 1, 2, and 4 through 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Heichler.

Reference is made to the Examiner's Answer (Paper No. 24, mailed October 15, 1996) for the examiner's complete reasoning in support of the rejection, and to appellants' Brief (Paper No. 23, filed July 1, 1996) and Reply Brief (Paper No. 25, filed December 16, 1996) for appellants' arguments thereagainst.

OPINION

We have carefully considered the claims, the applied prior art reference, and the respective positions articulated by appellants and the examiner. As a consequence of our review, we will reverse the obviousness rejection of claims 1, 2, and 4 through 7.[2]

No. 0188271, in the prior art section of the Answer. On page 2 of the Answer, the examiner withdraws all rejections based upon Harmon and LaRosa. Further, the examiner has not applied Fukasawa against any of the claims on appeal. Accordingly, we will not consider LaRosa, Harmon, or Fukasawa in deciding this appeal.

[2] We note in passing that in our careful review of claim 1 we found that the use of the word "especially" in the second line may render claim 1 indefinite. We have interpreted the claim as being directed to transmission on an optical link in view of the reference to an optical link in line 11 of

Claim 1, the only independent claim, recites "[a] signal transmission performance optimization device ... comprising: ... control means for controlling a relative phase between two propagation modes transmitted via said optical link for at least one of said send end unit and said receive end unit" (underlining added for emphasis). Appellants argue (Brief, page 7) that the claimed invention is directed to optimizing the transmitted signal whereas Heichler relates to optimizing the recovered signal. In response, the examiner asserts (Answer, page 7) that the phrase "for at least one of said send end unit and said receive end unit" indicates that "the localization of the optimization can be either the send or receive end units."

To interpret the phrase as the examiner has, to mean that the control can be of either the transmitted or the received signal, requires one to ignore both the specification and also other recitations in the claim. The claim is clearly directed to optimizing signals transmitted from the send unit, as is

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the claim (as printed in the appendix to the Brief). As the examiner has not raised as an issue any indefiniteness in the claim, we will refrain from discussing this any further.

the entire disclosure. Although particular limitations from the specification will not be read into the claims,(see Loctite Corp. v. Ultraseal Ltd ., 781 F.2d 861, 867, 228 USPQ 90, 93 (Fed. Cir. 1985)), it is proper to use the specification to interpret a word or phrase in the claim. See E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433, 7 USPQ2d 1129, 1132 (Fed. Cir. 1988); Loctite, 781 F.2d at 867, 228 USPQ at 93. Reading the phrase in light of the specification and the remainder of the claim, the skilled artisan would conclude that "for at least one of said send end unit and said receive end unit" merely refers to the location of the control element and not to what unit is to be controlled. Accordingly, appellants' argument that Heichler relates only to optimization of the recovered signal is not irrelevant, as suggested by the examiner (Answer, page 7).

The examiner alternatively argues (Answer, pages 7-8) that it would have been obvious "to modify Heichler to include an optimizing means in the send end unit because one of ordinary skill ... would have wanted to further improve upon the quality of communication by not only improving the

reception end of the communication but also the transmission end of the data flow." However, Heichler includes no suggestion for such a modification, and in fact limits his invention to the reception unit by stating (column 5, lines 7-15) that although the two data streams inherently have interference, the phase ambiguity to be corrected "is associated with the carrier recovery in the demodulator" and is caused by the process of demodulation. Further, the examiner has failed to provide any references to suggest the modification. Accordingly, Heichler does not optimize transmission performance, as required by claim 1.

The examiner further contends (Answer, page 8) that Heichler's resolution of phase ambiguity between two signals, Q1 and Q2, equates to the claimed control of a relative phase between two transmitted propagation modes. However, signals Q1 and Q2 are emitted by the demodulator at the input side of the decoder and relate to modulation techniques. On the other hand, as indicated by appellants (Reply Brief, page 3), "the propagation mode is related to the electric and magnetic field pattern of the transmitted signal," and is different from the modulation techniques. Thus, Heichler does not

control a relative phase between two transmitted propagation modes, as recited in claim 1.

Lastly, the examiner equates Heichler's comparisons of error signals to a threshold value with the claimed maintenance of a bit error rate below a maximum value. However, as pointed out by appellants (Reply Brief, page 5), Heichler's differential metric of a convolution code signal does not correspond to a bit error rate. Thus, Heichler's production of error signals based on a comparison of the differential metric with a threshold value does not meet the claimed maintenance of the bit error rate at the output of the decoder below a maximum bit error rate specified for the system.

In view of the above-noted deficiencies of Heichler, the examiner has not established a prima facie case of obviousness. Consequently, we cannot sustain the rejection of claim 1, nor any of its dependents, namely claims 2 and 4 through 7.

CONCLUSION

The decision of the examiner rejecting claim 1, 2, and 4 through 7 under 35 U.S.C. § 103 is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

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